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453 Diving-Associated Spinal Cord Injuries During Drought Conditions — Wisconsin, 1988
454 Tornado Disaster — Texas
461 Prevalence of Human Immunodeficiency Virus Antibody in U.S. Active-Duty Military Personnel, April 1988

Epidemiologic Notes and Reports

Diving-Associated Spinal Cord Injuries During Drought Conditions — Wisconsin, 1988

From June 1 through July 15, 1988, eight patients with cervical spinal cord injuries (SCIs) that occurred from diving into water were reported to two spinal injury centers in Milwaukee, Wisconsin. During similar periods in 1986 and 1987, five and three such injuries, respectively, were reported to these centers.

The injured persons ranged in age from 15 to 23 years, and all eight were male. One was injured in a swimming pool and is not included in this report. The other seven were injured in natural bodies of water, and six of the seven were familiar with these bodies of water. All patients believed the water was deeper than it actually was. Five patients have some degree of quadriplegia with or without fracture (Table 1), and two have either no neurologic deficits or no residual neurologic deficits.

Wisconsin, like other states in the Midwest and Southeast, has experienced drought conditions. This year's rainfall has averaged about 6 inches below that of last year for these regions. Water levels in inland lakes are between 10 inches and 10 feet below normal levels.

Reported by: DJ Maiman, MD, Veterans Administration Hospital, Milwaukee; D Kunelius, Wisconsin Dept of Natural Resources; H Weiss, MPH, HA Anderson, MD, JP Davis, MD, State Epidemiologist, Wisconsin Dept of Health and Social Svcs. Div of Field Svcs, Epidemiology Program Office; Div of Injury Epidemiology and Control, Center for Environmental Health and Injury Control, CDC.

TABLE 1. Selected characteristics of seven patients referred to two spinal injury centers for non-swimming-pool diving-related injuries — Milwaukee, Wisconsin, June 1–July 15, 1988

Age (years)	Body of water	Anatomic site of injury*	Resulting injury
18	lagoon	C7	quadriplegia
18	river or pond	C6	quadriplegia
19	lake	C6	fracture, no residual neurologic deficits
22	lake	C7	quadriplegia
22	lake	C6	fracture, no residual neurologic deficits
23	lake	C7	incomplete quadriplegia
23	lake	C7	incomplete quadriplegia

*C = cervical spine.

Injuries – Continued

Editorial Note: Each year, 10,000–20,000 new SCIs occur in the United States (*1*). As many as 1,000 of these injuries result when persons—predominantly males aged 15–25 years—dive into swimming pools or natural bodies of water (*1,2*). In a 1970–1971 case series in California, 15 cases of quadriplegia were reported. One resulted from a dive into a swimming pool; the other 14 cases resulted from dives into rivers, streams, lakes, or oceans (*3*). Only three of these injured persons from California had objective evidence of the depth of the water at the time of injury; most of the divers had underestimated it.

This summer's drought, affecting most midwestern and many southern states, has resulted in record-low water levels in rivers, lakes, and streams. These conditions probably increase the risk of SCIs from diving, even in natural bodies of water previously considered safe. Because of extremely low water levels, no one should dive—even into a familiar body of water—until the depth of the water has been objectively measured.

Several strategies to prevent diving-associated SCIs have been suggested. States can closely monitor water levels in natural bodies of water during periods of low rainfall and can post warning signs to alert potential divers of hazards. In some localities, public education and poster campaigns have been used, and areas that are too shallow for diving have been posted as being hazardous. Other strategies urge divers to determine the depth of the water by wading into it before diving or by first jumping feet first into the water (*4*).

In 1987, the Council of State and Territorial Epidemiologists recommended that traumatic SCIs be designated as reportable injuries (*5*). Strengthening state-based surveillance of SCIs will help identify hazardous diving conditions under which SCIs may be more likely to occur. Surveillance can also assist in implementing and evaluating measures to prevent SCIs.

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Tornado Disaster – Texas

On May 22, 1987, between 8:15 p.m. and 8:20 p.m., Saragosa, Texas, was devastated by a violent, multiple-vortex tornado, with winds of 207–260 mph. Saragosa is an unincorporated Hispanic community of 200–415 persons located in sparsely populated Reeves County (population 16,300) in southwest Texas. The tornado inflicted widespread damage throughout the town. The worst damage occurred in the residential and business areas where structures were totally destroyed. Many automobiles were hurled several hundred feet into buildings and homes. One hundred three families incurred severe economic losses.

Tornado Disaster — Continued

Thirty people were killed and 131 injured. Among the destroyed buildings was a community hall in which about 80 persons had gathered for a graduation ceremony for preschool children; 22 persons died and approximately 60 were injured inside this hall. Three persons in a frame home, four in mobile homes, and one in an automobile also died. Five of the decedents were less than 5 years of age, three were 5–16 years, 17 were 20–59 years, and four were over the age of 60. The mean age at death was 37 years.

Persons with minor injuries were treated on the site; others were referred to five hospitals in nearby communities. Most victims (93 casualties and 31 hospital admissions in less than 8 hours) were treated 30 miles away in Pecos at the hospital closest to Saragosa. Most injuries consisted of contusions, lacerations, and fractures. Some wounds became infected because of dust and soil contamination and insufficient first aid. In addition to the 131 injuries associated with the immediate impact of the tornado, many postimpact injuries were sustained by residents or emergency workers. These injuries included sunburn, heat exposure, lacerations, cuts, puncture wounds, fingers crushed with hammers, and animal bites. The American Red Cross also reported several stress-related medical conditions, such as hypertension and diabetic reactions due to failure to take insulin.

Because electricity was interrupted in the entire area, a potential health problem involved perishable food requiring refrigeration. Residents were advised to dispose of all perishable food and were provided with meals by the Red Cross mobile canteen. The disaster site was watered to avoid excessive dust exposure. Tents used for meetings and temporary storage facilities were raised on the site by the National Guard. Portable restrooms and showers were placed on the site. Both the American Red Cross and the Texas Department of Health Regional Office established outpatient centers that ensured a continuity in medical and immunization care, issued copies of lost medical records and immunization certificates, and provided some mental health follow-up and counseling.

Reported by: Disaster Operations, National Headquarters, American Red Cross; National Weather Svc Southern Region, Fort Worth, Texas. Div of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control, CDC.

Editorial Note: Tornadoes occur frequently in most parts of Texas but are relatively rare in Reeves County. The proximity of the Davis Mountains, less than 20 miles south and west of Saragosa, deter their development. Records show only 20 tornadoes in Reeves County from 1950 through 1986. No tornado-related fatalities were recorded in the county before 1987, even though record keeping began in 1916 (*1*).

A severe thunderstorm watch was in effect on May 22, 1987, for Reeves County from 3:45 p.m. to 10:00 p.m., and beginning midafternoon local television stations displayed a severe thunderstorm watch symbol. The National Weather Service (NWS) Office at Midland issued a tornado warning for south and central Reeves County at 7:54 p.m. This warning was partly based on reports of forming tornadoes from NWS-trained storm spotters. Local radio and TV stations promptly broadcasted the warning. The radio station in Pecos broadcasted the warning in both English and Spanish.

Although the graduation exercise attendees did not hear the broadcast of the NWS warning, they were warned of the approaching tornado by a person who had stepped outside and spotted it. Despite some confusion, during the 1–2 minutes before the tornado hit, many persons demonstrated knowledge of tornado safety by taking

Tornado Disaster — Continued

proper protective action. Parents removed the kindergarten children from the stage and placed them under tables and benches next to the walls. Parents also used themselves as shields to protect their children. The open structure of the community hall made these actions the only options for safety. Some persons considered leaving the hall but remembered safety rules advising against being in the open or in vehicles in a tornado. None of the 4- and 5-year-old children participating in the graduation exercise were killed.

The NWS issued the tornado warning for the area 20 minutes before the tornado hit, but the town did not have a warning siren. Even if a siren had been activated, there was no preidentified shelter in this community or county, and the community hall might have been considered one of the safest structures. Most housing structures were not built to withstand high wind, and walls were constructed of wood, bricks, adobe, or unreinforced concrete. The numbers of injuries and deaths were high (an estimated 70% of persons in the swath of the tornado were injured) probably because of the lack of shelters and protective housing.

(Continued on page 461)

TABLE I. Summary — cases of specified notifiable diseases, United States

Disease	30th Week Ending			Cumulative, 30th Week Ending		
	Jul. 30, 1988	Aug. 1, 1987	Median 1983-1987	Jul. 30, 1988	Aug. 1, 1987	Median 1983-1987
Acquired Immunodeficiency Syndrome (AIDS)	278	U*	193	17,993	11,016	4,279
Aseptic meningitis	122	475	391	2,638	4,254	3,647
Encephalitis: Primary (arthropod-borne & unspec)	12	34	34	395	569	567
Post-infectious	1	1	1	68	71	71
Gonorrhea: Civilian	12,135	14,713	18,668	387,848	449,837	494,101
Military	177	367	411	7,007	9,524	12,070
Hepatitis: Type A	466	444	415	13,766	14,256	12,243
Type B	453	498	484	12,476	14,874	14,371
Non A, Non B	34	65	69	1,454	1,849	2,067
Unspecified	44	64	97	1,208	1,818	2,752
Legionellosis	11	25	18	478	534	397
Leprosy	2	4	2	96	112	146
Malaria	23	30	30	447	471	492
Measles: Total†	50	96	39	1,798	3,040	2,123
Indigenous	37	59	33	1,609	2,690	1,880
Imported	13	37	6	189	350	244
Meningococcal infections	39	48	39	1,883	1,912	1,826
Mumps	63	79	36	3,166	9,839	2,277
Pertussis	72	76	66	1,229	1,098	1,190
Rubella (German measles)	2	19	22	132	264	444
Syphilis (Primary & Secondary): Civilian	838	866	629	21,857	19,697	15,935
Military	5	2	4	100	92	112
Toxic Shock syndrome	9	6	11	181	180	228
Tuberculosis	439	387	511	11,482	11,973	12,078
Tularemia	4	11	11	101	109	109
Typhoid Fever	4	7	9	193	175	181
Typhus fever, tick-borne (RMSF)	28	29	40	336	345	385
Rabies, animal	58	69	96	2,403	2,866	3,029

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1988		Cum. 1988
Anthrax	-	Leptospirosis	18
Botulism: Foodborne (Fla. 1, Alaska 1)	15	Plague	4
Infant	21	Poliomyelitis, Paralytic	-
Other	3	Psittacosis (N.H. 1, Mass. 1)	47
Brucellosis (Ga. 1, Va. 1, N.M. 1)	37	Rabies, human	-
Cholera	-	Tetanus (N.C. 1)	26
Congenital rubella syndrome	3	Trichinosis	38
Congenital syphilis, ages <1 year	171		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Eleven of the 50 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending July 30, 1988 and August 1, 1987 (30th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	17993	2,638	395	68	387,848	449,837	13,766	12,476	1,454	1,208	478	96
NEW ENGLAND	738	126	16	1	11,801	13,952	516	747	92	63	20	13
Maine	25	8	1	-	237	394	14	32	3	1	2	-
N.H.	20	16	1	-	150	226	31	40	7	3	1	-
Vt.	9	8	5	-	81	123	8	21	5	2	1	-
Mass.	397	50	7	1	4,120	5,014	245	481	61	44	13	12
R.I.	48	30	-	-	1,042	1,189	56	64	9	-	3	1
Conn.	239	14	2	-	6,171	7,006	162	129	7	13	-	-
MID. ATLANTIC	6,058	235	38	4	59,440	74,075	827	1,631	86	138	118	8
Upstate N.Y.	801	131	26	1	8,151	10,178	453	428	40	14	52	-
N.Y. City	3,311	57	7	3	25,403	39,228	174	762	10	98	18	7
N.J.	1,414	47	5	-	8,538	9,273	139	368	29	26	20	1
Pa.	532	-	-	-	17,348	15,396	61	73	9	-	28	-
E.N. CENTRAL	1,359	358	99	9	61,693	65,562	900	1,341	121	65	104	1
Ohio	277	121	28	2	14,057	14,476	200	327	20	10	43	-
Ind.	80	38	12	-	4,721	5,148	78	185	11	17	8	-
Ill.	672	61	24	7	18,362	20,196	257	256	43	15	-	-
Mich.	281	118	24	-	19,992	18,748	223	424	28	20	42	-
Wis.	69	20	11	-	4,561	5,994	142	149	19	3	11	1
W.N. CENTRAL	424	111	25	5	15,764	18,010	802	596	69	20	53	1
Minn.	88	20	2	2	2,172	2,844	62	82	13	3	2	-
Iowa	23	19	9	-	1,210	1,766	34	88	11	1	13	-
Mo.	222	36	1	-	8,858	9,385	449	350	31	10	11	-
N. Dak.	3	-	4	-	94	172	4	5	2	4	1	-
S. Dak.	5	10	1	1	311	330	6	3	2	-	14	-
Nebr.	26	5	4	2	917	1,159	42	33	1	-	5	-
Kans.	58	21	5	-	2,102	2,374	205	65	9	2	7	1
S. ATLANTIC	3,063	624	54	26	113,902	117,607	1,207	2,591	221	174	87	1
Del.	31	12	2	-	1,645	1,862	22	79	6	1	7	-
Md.	328	84	4	3	10,934	13,330	159	395	21	11	13	1
D.C.	291	11	-	1	8,107	7,930	11	28	3	1	-	-
Va.	183	67	21	3	7,658	8,632	257	199	51	112	6	-
W. Va.	9	13	4	-	787	869	8	33	2	3	-	-
N.C.	172	82	14	-	17,827	17,415	195	466	51	-	26	-
S.C.	104	11	-	1	9,930	9,689	30	321	6	4	13	-
Ga.	434	76	1	-	21,395	20,415	233	386	8	3	12	-
Fla.	1,511	288	8	18	35,619	37,465	292	684	71	39	10	-
E.S. CENTRAL	446	190	31	6	30,313	33,863	410	753	107	7	20	1
Ky.	50	56	10	1	2,976	3,438	345	135	38	2	8	-
Tenn.	210	14	6	-	10,218	11,752	41	368	27	-	6	-
Ala.	116	95	15	2	9,586	10,928	8	197	34	5	3	1
Miss.	70	25	-	3	7,521	7,735	16	52	8	-	3	-
W.S. CENTRAL	1,435	326	44	2	42,886	50,499	1,578	1,024	113	305	12	19
Ark.	54	5	2	-	4,186	5,676	177	60	1	10	2	-
La.	205	52	14	-	8,606	9,036	80	196	17	9	4	1
Okla.	83	28	4	-	3,946	5,807	281	106	28	20	6	-
Tex.	1,093	241	24	2	26,168	30,180	1,038	662	67	266	-	18
MOUNTAIN	551	101	20	2	8,415	11,867	1,950	974	155	105	26	1
Mont.	9	2	-	-	267	314	25	33	8	3	-	-
Idaho	6	1	-	-	225	433	95	86	4	3	-	-
Wyo.	3	1	-	-	130	264	4	9	3	-	2	-
Colo.	211	39	3	-	1,903	2,571	137	123	44	53	6	1
N. Mex.	26	5	2	-	770	1,310	365	143	11	1	1	-
Ariz.	169	31	6	1	3,040	4,105	975	372	45	27	12	-
Utah	42	13	4	1	329	370	215	86	29	14	2	-
Nev.	85	9	5	-	1,751	2,500	134	142	12	4	3	-
PACIFIC	3,919	567	68	13	43,634	64,412	5,578	2,819	488	331	38	51
Wash.	236	-	4	4	3,612	4,886	1,222	439	98	33	11	3
Oreg.	121	-	-	-	1,812	2,387	838	347	48	14	-	1
Calif.	3,486	505	61	9	37,235	55,633	3,292	1,970	337	275	24	39
Alaska	14	11	2	-	615	970	220	34	4	5	-	1
Hawaii	62	51	1	-	360	526	6	29	1	4	3	7
Guam	1	-	-	-	86	131	5	7	-	2	1	3
P.R.	769	23	2	1	789	1,232	27	153	26	27	-	3
V.I.	25	-	-	-	218	148	1	5	2	-	-	-
Amer. Samoa	-	-	-	-	45	45	-	2	-	4	-	2
C.N.M.I.	-	-	-	-	27	-	1	2	-	4	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending July 30, 1988 and August 1, 1987 (30th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	1988	Cum. 1988	Cum. 1987
UNITED STATES	447	37	1,609	13	189	3,040	1,893	63	3,166	72	1,229	1,096	2	132	264
NEW ENGLAND	37	-	80	2	50	250	180	4	102	11	105	49	1	2	1
Maine	2	-	7	-	-	3	7	-	-	-	11	5	-	-	1
N.H.	1	-	66	-	44	151	17	-	94	4	33	4	-	-	-
Vt.	2	-	-	-	-	26	10	1	2	-	2	4	-	-	-
Mass.	20	-	1	2†	2	48	74	3	6	6	43	23	1	1	-
R.I.	4	-	-	-	-	2	21	-	-	-	4	1	-	1	-
Conn.	8	-	6	-	4	20	31	-	-	1	12	12	-	-	-
MID. ATLANTIC	64	11	620	1	28	539	182	3	257	-	65	136	-	12	11
Upstate N.Y.	21	-	15	-	5	36	88	3	72	-	39	100	-	2	9
N.Y. City	32	-	39	-	2	430	48	-	92	-	1	-	-	7	1
N.J.	5	-	77	-	11	35	45	-	31	-	4	6	-	1	1
Pa.	6	11	489	1§	10	38	1	-	72	-	21	30	-	2	-
E.N. CENTRAL	28	-	129	2	44	294	255	5	664	1	116	136	-	23	31
Ohio	4	-	2	-	21	6	86	1	97	-	25	35	-	-	-
Ind.	2	-	56	-	-	-	21	-	63	-	55	6	-	-	-
Ill.	1	-	53	-	15	123	55	4	246	-	2	13	-	19	22
Mich.	19	-	18	1§	5	29	57	-	173	1	23	30	-	4	9
Wis.	2	-	-	1†	3	137	36	-	85	-	11	52	-	-	-
W.N. CENTRAL	11	-	11	-	-	221	72	-	116	14	71	88	-	-	1
Minn.	5	-	10	-	-	38	16	-	-	12	29	10	-	-	-
Iowa	1	-	-	-	-	-	-	-	31	1	19	15	-	-	1
Mo.	3	-	1	-	-	183	24	-	30	-	9	23	-	-	-
N. Dak.	-	-	-	-	-	1	-	-	-	-	7	5	-	-	-
S. Dak.	-	-	-	-	-	-	3	-	1	1	3	3	-	-	-
Nebr.	1	-	-	-	-	-	10	-	11	-	-	1	-	-	-
Kans.	1	-	-	-	-	1	19	-	43	-	4	11	-	-	-
S. ATLANTIC	61	3	244	-	12	122	337	16	480	-	143	190	1	16	13
Del.	-	-	-	-	-	32	1	-	-	-	4	3	-	-	2
Md.	7	3	9	-	2	5	37	7	86	-	26	5	1	1	2
D.C.	9	-	-	-	-	1	7	6	175	-	-	-	-	-	-
Va.	9	-	141	-	2	1	38	-	132	-	27	38	-	11	1
W. Va.	-	-	6	-	-	-	4	-	8	-	4	30	-	-	-
N.C.	10	-	-	-	1	4	58	3	38	-	37	79	-	-	1
S.C.	7	-	-	-	-	2	33	-	4	-	1	-	-	-	-
Ga.	4	-	-	-	-	1	47	-	25	-	20	17	-	1	1
Fla.	15	-	88	-	7	76	111	-	22	-	24	18	-	3	6
E.S. CENTRAL	7	-	48	-	-	2	175	5	376	7	32	22	-	-	3
Ky.	-	-	35	-	-	-	37	4	174	6	6	1	-	-	2
Tenn.	-	-	-	-	-	-	102	1	189	-	13	6	-	-	1
Ala.	4	-	-	-	-	-	25	-	10	1	12	10	-	-	-
Miss.	3	-	13	-	-	2	11	N	N	-	1	5	-	-	-
W.S. CENTRAL	46	-	11	-	3	339	124	12	619	-	72	94	-	7	10
Ark.	1	-	-	-	1	-	16	-	78	-	7	8	-	3	2
La.	8	-	-	-	-	-	37	7	234	-	11	17	-	-	-
Okla.	7	-	8	-	-	3	13	4	168	-	27	69	-	1	5
Tex.	30	-	3	-	2	336	58	1	139	-	27	-	-	3	3
MOUNTAIN	21	-	116	8	18	487	55	1	149	23	390	109	-	5	22
Mont.	4	-	-	8†	16	128	2	-	2	-	1	5	-	-	6
Idaho	-	-	-	-	1	-	5	-	2	-	249	33	-	-	1
Wyo.	-	-	-	-	-	2	-	-	2	-	1	5	-	-	1
Colo.	9	-	116	-	1	9	14	-	28	-	14	35	-	1	-
N. Mex.	1	-	-	-	-	317	10	N	N	2	11	7	-	-	-
Ariz.	4	-	-	-	-	27	14	1	101	21	83	23	-	-	4
Utah	2	-	-	-	-	1	9	-	3	-	20	1	-	3	10
Nev.	1	-	-	-	-	3	1	-	11	-	1	-	-	1	-
PACIFIC	172	23	360	-	34	786	533	17	383	16	245	294	-	67	172
Wash.	10	-	2	-	-	36	46	-	19	2	51	49	-	-	1
Oreg.	11	-	3	-	-	60	29	N	N	4	15	14	-	-	2
Calif.	145	23	343	-	29	686	438	17	337	10	129	115	-	50	108
Alaska	2	-	-	-	-	-	6	-	7	-	5	5	-	-	2
Hawaii	4	-	2	-	5	4	14	-	9	-	45	111	-	17	59
Guam	-	-	-	-	1	2	-	-	2	-	-	-	-	1	1
P.R.	1	1	191	-	-	701	8	-	6	-	9	13	-	1	2
V.I.	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C.N.M.I.	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-

*For measles only, imported cases includes both out-of-state and international importations.
N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending July 30, 1988 and August 1, 1987 (30th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	21,857	19,697	181	11,482	11,973	101	193	336	2,403
NEW ENGLAND	617	323	14	300	372	2	16	8	9
Maine	9	1	3	17	17	-	-	-	1
N.H.	6	3	3	6	8	-	-	-	3
Vt.	2	1	2	2	8	-	1	-	-
Mass.	243	157	6	177	204	1	11	4	-
R.I.	19	8	-	26	30	-	-	2	-
Conn.	338	153	-	72	105	1	4	2	5
MID. ATLANTIC	4,415	3,758	27	2,065	2,051	-	36	13	296
Upstate N.Y.	296	140	12	307	307	-	5	6	17
N.Y. City	2,799	2,712	5	1,012	997	-	20	5	-
N.J.	518	407	3	355	376	-	11	-	6
Pa.	802	499	7	391	371	-	-	2	273
E.N. CENTRAL	661	536	27	1,306	1,392	1	23	25	80
Ohio	65	67	20	253	265	-	5	20	3
Ind.	34	36	-	139	136	-	2	-	17
Ill.	315	286	1	539	599	-	11	2	16
Mich.	229	107	6	315	330	1	4	2	18
Wis.	18	40	-	60	62	-	1	1	26
W.N. CENTRAL	136	89	21	293	367	51	4	50	285
Minn.	13	12	3	44	76	3	2	2	90
Iowa	15	12	4	26	24	-	-	-	13
Mo.	80	46	7	152	199	32	2	29	11
N. Dak.	1	-	2	5	6	-	-	-	57
S. Dak.	-	8	1	21	21	12	-	7	83
Nebr.	21	7	2	9	15	2	-	1	9
Kans.	6	4	2	36	26	2	-	11	22
S. ATLANTIC	7,979	6,747	15	2,523	2,582	4	21	110	798
Del.	66	47	1	22	28	1	-	-	36
Md.	442	343	2	255	224	-	1	18	201
D.C.	381	193	-	109	80	-	1	-	4
Va.	246	173	-	226	267	2	8	12	226
W. Va.	7	6	-	48	67	-	-	1	63
N.C.	444	373	7	233	280	-	1	54	2
S.C.	457	461	2	276	247	-	-	13	50
Ga.	1,319	918	-	416	454	1	2	9	157
Fla.	4,617	4,233	3	938	955	-	8	3	59
E.S. CENTRAL	1,138	1,090	14	936	1,014	7	3	42	177
Ky.	38	10	7	231	240	4	1	12	70
Tenn.	501	448	4	267	298	2	-	21	55
Ala.	328	274	3	294	305	-	1	5	50
Miss.	271	358	-	144	171	1	1	4	2
W.S. CENTRAL	2,443	2,461	17	1,487	1,363	25	6	77	329
Ark.	132	156	1	155	162	16	-	12	55
La.	455	415	-	190	144	-	2	-	3
Okla.	90	92	6	146	139	9	-	56	24
Tex.	1,766	1,798	10	996	938	-	4	9	247
MOUNTAIN	447	411	23	286	350	7	6	9	204
Mont.	3	8	-	5	9	-	1	6	136
Idaho	2	4	3	11	21	-	-	1	2
Wyo.	1	1	-	2	2	1	-	2	27
Colo.	66	66	3	27	91	5	3	-	7
N. Mex.	35	35	-	63	54	1	1	-	4
Ariz.	108	201	8	149	141	-	1	-	25
Utah	11	15	9	-	16	-	-	-	3
Nev.	221	81	-	29	16	-	-	-	-
PACIFIC	4,021	4,282	23	2,286	2,462	4	78	2	225
Wash.	98	77	2	124	153	-	5	-	-
Oreg.	172	151	1	87	62	-	6	1	-
Calif.	3,722	4,042	20	1,900	2,096	2	64	1	217
Alaska	8	3	-	26	32	2	-	-	8
Hawaii	21	9	-	89	119	-	3	-	-
Guam	3	2	-	8	25	-	-	-	-
P.R.	359	565	-	113	183	-	4	-	40
V.I.	1	3	-	4	2	-	-	-	-
Amer. Samoa	-	-	-	3	3	-	1	-	-
C.N.M.I.	1	-	-	12	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending July 30, 1988 (30th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	>65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	581	395	107	50	21	18	38
Boston, Mass.	176	97	43	22	8	6	18
Bridgeport, Conn.	54	37	10	6	-	1	5
Cambridge, Mass.	14	10	2	2	-	-	3
Fall River, Mass.	22	18	2	1	1	-	1
Hartford, Conn.	38	18	8	6	2	4	-
Lowell, Mass.	23	17	4	-	2	-	2
Lynn, Mass.	12	10	1	1	-	-	-
New Bedford, Mass.	26	19	4	2	1	-	-
New Haven, Conn.	44	31	4	2	5	2	2
Providence, R.I.	32	20	9	1	1	1	-
Somerville, Mass.	7	7	-	-	-	-	-
Springfield, Mass.	45	33	7	3	1	1	2
Waterbury, Conn.	35	27	5	3	-	-	2
Worcester, Mass.	63	51	8	1	-	3	3
MID. ATLANTIC	2,763	1,743	566	321	72	60	131
Albany, N.Y.	49	33	11	4	1	-	2
Allentown, Pa.	15	10	4	-	1	-	-
Buffalo, N.Y.§	117	83	21	6	4	2	13
Camden, N.J.	24	13	7	3	1	-	3
Elizabeth, N.J.	23	15	6	1	-	1	1
Erie, Pa.†	55	39	13	2	1	-	4
Jersey City, N.J.	43	29	8	5	-	1	-
N.Y. City, N.Y.	1,451	893	295	199	33	31	49
Newark, N.J.	102	37	24	32	4	5	5
Paterson, N.J.	33	10	10	5	5	3	2
Philadelphia, Pa.	401	264	83	33	14	7	31
Pittsburgh, Pa.†	69	50	14	2	1	2	4
Reading, Pa.	32	26	3	2	1	-	4
Rochester, N.Y.	114	82	21	7	3	1	4
Schenectady, N.Y.	25	19	4	2	-	-	-
Scranton, Pa.†	19	13	5	-	1	-	1
Syracuse, N.Y.	96	67	18	8	2	3	5
Trenton, N.J.	35	18	9	7	-	1	1
Utica, N.Y.	28	20	5	2	-	1	1
Yonkers, N.Y.	32	22	7	1	-	2	1
E.N. CENTRAL	2,208	1,481	436	161	65	65	93
Akron, Ohio	60	42	10	4	-	4	-
Canton, Ohio	34	27	5	-	-	2	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	143	98	27	9	6	3	15
Cleveland, Ohio	152	90	35	15	8	4	2
Columbus, Ohio	124	79	26	12	5	2	5
Dayton, Ohio	121	85	23	7	3	3	12
Detroit, Mich.	237	146	45	24	15	7	2
Evansville, Ind.	44	31	12	-	1	-	2
Fort Wayne, Ind.	54	40	9	5	-	-	5
Gary, Ind.	32	22	5	3	2	-	-
Grand Rapids, Mich.	44	33	7	4	-	-	3
Indianapolis, Ind.	167	117	33	8	2	7	1
Madison, Wis.	38	23	8	2	2	3	3
Milwaukee, Wis.	133	99	18	12	1	3	7
Peoria, Ill.	39	29	6	2	1	1	5
Rockford, Ill.	44	32	9	1	2	-	1
South Bend, Ind.	38	30	6	1	1	-	4
Toledo, Ohio	98	65	19	7	4	3	8
Youngstown, Ohio	42	31	8	-	2	1	-
W.N. CENTRAL	787	552	141	39	33	22	31
Des Moines, Iowa	88	61	18	4	4	1	1
Duluth, Minn.	27	21	2	1	3	-	3
Kansas City, Kans.	38	31	5	-	1	1	1
Kansas City, Mo.	83	52	19	7	3	2	1
Lincoln, Nebr.	28	20	6	1	-	1	1
Minneapolis, Minn.	195	136	34	10	7	8	12
Omaha, Nebr.	87	62	11	6	4	4	7
St. Louis, Mo.	120	77	25	8	8	2	2
St. Paul, Minn.	50	38	7	1	2	2	-
Wichita, Kans.§	71	54	14	1	1	1	3
S. ATLANTIC	1,249	740	289	132	44	42	52
Atlanta, Ga.	176	83	49	22	10	12	3
Baltimore, Md.	277	162	65	29	12	9	9
Charlotte, N.C.	49	32	9	3	2	3	4
Jacksonville, Fla.	107	74	22	8	2	1	5
Miami, Fla.	89	43	24	16	4	2	1
Norfolk, Va.	50	36	9	2	3	-	5
Richmond, Va.	74	49	16	7	-	1	7
Savannah, Ga.	70	52	11	5	1	1	3
St. Petersburg, Fla.	61	46	12	2	-	1	1
Tampa, Fla.	66	42	16	3	1	4	3
Washington, D.C.	199	99	52	32	9	7	9
Wilmington, Del.	31	22	4	3	-	1	2
E.S. CENTRAL	726	468	159	54	23	22	39
Birmingham, Ala.	132	73	32	11	6	10	3
Chattanooga, Tenn.	46	34	9	3	-	-	6
Knoxville, Tenn.	79	56	17	6	-	-	4
Louisville, Ky.	117	71	29	8	6	3	8
Memphis, Tenn.	125	89	19	8	5	4	10
Mobile, Ala.	72	48	19	6	-	1	1
Montgomery, Ala.	24	16	6	1	1	-	2
Nashville, Tenn.	131	83	28	11	5	4	5
W.S. CENTRAL	1,226	749	269	116	53	39	36
Austin, Tex.	46	30	7	6	2	1	3
Baton Rouge, La.	38	24	13	1	-	-	1
Corpus Christi, Tex.	52	36	12	1	3	-	1
Dallas, Tex.	169	93	37	25	6	8	1
El Paso, Tex.	53	34	12	4	2	1	3
Fort Worth, Tex	109	66	27	5	5	6	4
Houston, Tex.§	308	176	74	34	13	11	7
Little Rock, Ark.	69	37	17	4	6	5	2
New Orleans, La.	153	101	24	15	10	3	-
San Antonio, Tex.	140	87	31	16	4	2	8
Shreveport, La.	35	31	2	1	-	1	3
Tulsa, Okla.	54	34	13	4	2	1	3
MOUNTAIN	623	382	146	53	34	27	27
Albuquerque, N. Mex.	88	58	13	7	8	2	2
Colo. Springs, Colo.	38	22	10	1	2	3	4
Denver, Colo.	98	54	23	7	3	11	4
Las Vegas, Nev.	92	53	28	5	4	1	7
Ogden, Utah	30	25	1	1	3	-	1
Phoenix, Ariz.	94	42	26	14	9	3	2
Pueblo, Colo.	27	21	6	-	-	-	1
Salt Lake City, Utah	69	25	16	10	3	5	2
Tucson, Ariz.	97	62	23	8	2	2	4
PACIFIC	1,824	1,189	310	200	54	66	100
Berkeley, Calif.	16	11	3	1	-	1	2
Fresno, Calif.	77	52	14	6	1	4	6
Glendale, Calif.	26	22	1	2	1	-	3
Honolulu, Hawaii	72	47	21	2	-	2	10
Long Beach, Calif.	84	55	15	10	2	2	9
Los Angeles Calif.	511	335	87	55	23	6	13
Oakland, Calif.	62	36	13	10	-	3	3
Pasadena, Calif.	33	22	5	4	-	2	1
Portland, Oreg.	103	66	16	10	3	8	7
Sacramento, Calif.	140	88	26	16	2	8	15
San Diego, Calif.	122	81	21	12	3	5	11
San Francisco, Calif.	161	96	24	27	6	8	1
San Jose, Calif.	164	105	27	19	9	4	10
Seattle, Wash.	159	104	23	21	1	10	1
Spokane, Wash.	54	36	11	4	3	-	4
Tacoma, Wash.	40	33	3	1	-	3	4
TOTAL	11,997††	7,679	2,423	1,126	399	361	547

*Mortality data in this table are voluntarily reported from 121 cities in the United states, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past available 4 weeks.

Tornado Disaster — Continued

This episode and previous tornado disasters emphasize several points that apply to general tornado preparedness (*2–4*; CDC, unpublished data). Providing a warning message is only one part of the overall preparedness; other actions should include plans for coordination with the news media and local officials, training storm spotters, and developing other public awareness efforts. Bilingual and Spanish-speaking broadcast stations should also be provided with tornado preparedness materials. Groups with mobile communications capability, such as police and fire departments, highway patrols, and amateur radio operators, are especially important. Potential shelters should also be identified and evaluated. Finally, investigations of natural disasters and establishment of surveillance systems are fundamental to assess and improve preparedness efficiency (*5*).

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Prevalence of Human Immunodeficiency Virus Antibody in U.S. Active-Duty Military Personnel, April 1988

In January 1986, the U.S. Department of Defense began screening all active-duty military personnel for antibody to the human immunodeficiency virus type 1 (HIV-1). A total of 1,752,191 persons who remained on active duty as of April 24, 1988, were screened. HIV-1 antibody was confirmed by Western blot in 2,232 (1.3 per 1,000) of these persons.

Information from the armed forces' Reportable Disease Data Base was used to determine the demographic distribution of HIV-1-antibody seroprevalence rates (Table 1). Antibody prevalence by age ranged from 0.1 per 1,000 for those aged 17–19 years to 2.1 per 1,000 for those aged 25–29 years. Blacks were 3.6 times and Hispanics 2.5 times more likely than non-Hispanic whites to have HIV-1 antibody. Although blacks and Hispanics constituted 50.7% of those who were HIV-1-antibody-positive, they represented only 23.4% of all active-duty personnel. Seroprevalence was highest in men, unmarried persons, and enlisted personnel.

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HIV — Continued

Editorial Note: This report summarizes the findings of the largest HIV-1 screening program in a defined population of U.S. citizens. The prevalence of 1.3 per 1,000 persons on active duty as of April 24, 1988, is lower than that found for the screening program overall, since antibody-positive persons were somewhat more likely than seronegative persons to be separated or retired after obtaining their test results.

The HIV-1-antibody seroprevalence in current active-duty military personnel probably underrepresents the seroprevalence in the civilian population for three reasons. First, homosexual men and male and female intravenous-drug users are underrepresented in military personnel. Second, persons with hemophilia are not medically eligible for military service. Third, seropositive military recruit applicants are denied enlistment; from October 1985 to April 24, 1988, 2,060 of 1,456,177 (1.4 per 1,000) recruit applicants were seropositive.

HIV-1 screening data from active-duty military personnel can be used for monitoring levels and trends of HIV-1 infection in the United States. These data augment those from other large screened populations, such as military recruit applicants, National Guard personnel, Job Corps entrants, and blood donors. Although each population source has its own limitations and biases, demographic patterns of HIV-1-antibody seroprevalence observed in active-duty military personnel followed patterns observed in other population-based and sentinel studies. For example, each of four groups—black and Hispanic military recruit applicants (*1,2*), U.S. Army Reserve

TABLE 1. HIV-1-antibody seroprevalence in Department of Defense active-duty military personnel, by demographic subgroups, January 1987–April 24, 1988

Group	No. tested	No. positive	Seroprevalence (per 1,000)	Seroprevalence rate ratio	(95% CI)
Total	**1,752,191**	**2,232**	**1.3**		
Age group (years)*					
≥40	94,343	87	0.9	6.6	(4.5,9.3)
35–39	165,740	224	1.4	9.7	(6.9,13.1)
30–34	234,267	455	1.9	13.9	(10.2,18.6)
25–29	366,156	759	2.1	14.9	(10.9,19.8)
20–24	568,920	662	1.2	8.3	(6.1,11.1)
17–19	322,506	45	0.1	1.0	
Race/Ethnicity					
Black	337,300	988	2.9	3.6	(3.3,3.9)
Hispanic	71,917	144	2.0	2.5	(2.1,2.9)
Other	79,603	72	0.9	1.1	(0.9,1.4)
White	1,263,371	1,028	0.8	1.0	
Sex*					
Male	1,571,912	2,166	1.4	3.8	(2.9,4.8)
Female	180,278	66	0.4	1.0	
Marital status					
Other†	44,732	102	2.3	2.6	(2.1,3.2)
Never married	690,738	1,255	1.8	2.1	(1.9,2.3)
Married	1,016,721	875	0.9	1.0	
Rank*					
Enlisted	1,515,659	2,061	1.4	1.9	(1.6,2.2)
Officer	235,521	171	0.7	1.0	

*Age unknown for 259 persons, sex unknown for 1 person, rank unknown for 1,011 persons; all were seronegative.
†Includes divorced, widowed, separated, and unknown.

HIV — Continued

personnel (*3*), blood donors (*2*), and sentinel hospital patients (*4*)—were three to 12 times more likely than non-Hispanic whites to be HIV-1 seropositive. Similarly, men were at least three times as likely as women to be seropositive in these groups (*1–4*). Age-specific HIV-1 seroprevalence peaked in active-duty military personnel in the 25- to 34-year age groups, a finding similar to that in military recruit applicants (*1,2*) and sentinel hospital patients (*4*).

Continued monitoring of the active-duty military screening program will be important because all active-duty military personnel will be screened at least every 1–2 years for HIV antibody; therefore, the incidence of new HIV-1 infection can be measured directly. In September 1987, the observed incidence rate in 171,974 U.S. Army personnel was 0.74 new infections per 1,000 persons per year (*5*; JG McNeil, Walter Reed Army Institute of Research, personal communication). In comparison, for repeat blood donors to the American Red Cross—a very low risk population that is the only other large population for which incidence of HIV-1 infection can be directly measured—the observed incidence has remained stable at 0.03 new infections per 1,000 persons per year (*6*). Neither military personnel nor blood donors are truly representative of the U.S. population; those at highest risk of HIV infection are to a varying extent excluded from both groups.

Data from active-duty military personnel will also provide information about the spectrum of morbidity from HIV-1 infection in this large, defined population. All identified seropositive active-duty military personnel receive a detailed medical evaluation and are staged by the Walter Reed (WR) classification (*7*). Most HIV-1-seropositive persons have minimal or no symptoms. Of 650 seropositive active-duty personnel for whom data are available, 60% were asymptomatic (Walter Reed, stage 1 [WR-1]), and 18% had chronic lymphadenopathy without other evidence of immune dysfunction (WR-2) (*8*).

CDC will continue cooperating with the Department of Defense in monitoring levels and trends of HIV infection in active-duty military personnel and military recruit applicants. Surveys in other accessible populations at both low and increased risk of HIV infection are also under way.

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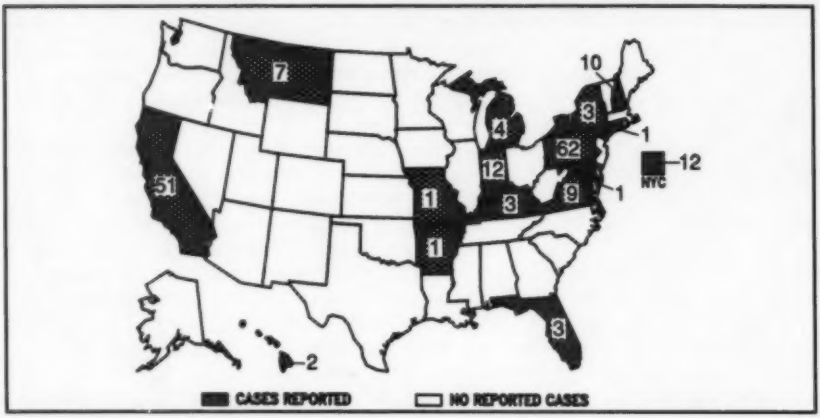
FIGURE I. Reported measles cases — United States, Weeks 26–29, 1988



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